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09/993,176	11/19/2001	Klaus Herrmann	P01,0398	6825

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EXAMINER	
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/993,176
Filing Date: November 19, 2001
Appellant(s): HERRMANN, KLAUS

MAILED

JUN 28 2005

Group 3700

Steven H. Noll
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on April 7, 2005.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 1-38 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,149,592	YANOF ET AL	11-2000
5,354,314	HARDY ET AL	10-1994
6,096,049	MCNEIRNEY ET AL	8-2000

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Applicant's arguments filed January 29, 2004 have been fully considered but they are not persuasive.

The applicant's argument on remarks on pages 7-8 alleged that the prior art (cited in Office Action dated November 6, 2003), Yanof et al's disclosure is different from the current application's claimed invention. The applicant states that Yanof et al's disclosure only deals with images acquired before the surgical procedure (page 8, lines 1-5) and does not concern with producing location indicator of actual subject on the operating table. In contrary to the applicant's statement, Yanof et al explicitly states that the location of a surgical tool is specifically guided to a target location by inserting biopsy needle into a patient while the imaging device (CT or fluoroscope) provides feedback to generate the position of the surgical tool relative to the target location. Therefore, Yanof et al clearly anticipate all claimed elements in claims 1 and 19. Thus, the rejection of claims 1-38 holds as in previous office action, which is restated below.

Claims 1-8, 10-12, 16-27, 29-31, and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by **Yanof et al** (US 6,149,592).

Claims 1, 7, 19, 20, and 26: Yanof et al anticipate all claimed invention in claims 1 and 20. Yanof et al disclose of method and apparatus of generating three-dimensional volume data and two-dimensional images from the volume data (frame or projection) with marker locating a reference points 70, 72 of object in interest. The markers represent the reference point to characterize the location of the images (col. 2, lines 32-56).

Claims 2, 16, 21, and 35: Yanof et al's imaging system and method is further described as being X-ray imaging and furthermore, the X-ray imaging system and method is a C-arm Computed -Tomography (col. 4, lines 7-25).

Claims 3, 4, 5, 22, 23, and 24: Yanof et al also disclose of the imaging system and method described above with the use of X-ray driven to generate volume data via projection where the X-ray driver includes motor that is automated to created multiple images (col. 3, lines 34-60). Furthermore, the characterization of the reference point is in communication with the drive controlling the x-ray device (col. 4, lines 48-64).

Claims 6, 8, 25, and 27: Yanof et al disclose of generating the volume data set through the use of computer and image processor 102, 120 along with image display 134 to display 134 the volume data (col. 6, lines 31-44; col. 6, lines 53-65).

Claims 10, 11, 12, 29, 30, and 31: Furthermore, Yanof et al disclose of the characterization of the reference point is in communication with the drive controlling the x-ray

device where the movement of the reference marker is automatically correlated with the movement of the rotation of the C-arm (col. 4, lines 48-64).

Claims 17, 18, 19, 36, 37, and 38: Yanof et al disclose of angular rotation about an orbital axis to generate the volume data set through CT imager. Previously, Yanof et al disclosed of using C-ram x-ray to achieve the volume data set. Therefore, Yanof et al clearly anticipate that the C-arm can be applied to create volume data set as in CT imaging device and method.

Claims 9 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yanof et al** (US 6,149,592) as applied to claims 1 and 19 above, and further in view of **Hardy et al** (US 5,354,314).

Yanof et al substantially disclose of all claimed invention in claims 9 and 28 where the computer system to generate the volume data from the x-ray projection inherently includes computer input peripheral device such as keyboard, mouse, trackball (inverted mouse), touch pen, etc., with exception of inputting the marker. Hardy et al disclose the use of touch screen as input device when using imaging device such as CT (col. 12, line 53 – col. 13, lines 22). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply the teachings of Yanof et al to the teachings of Hardy et al's touch screen input to achieve the claimed invention.

Claims 13-15 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yanof et al** (US 6,149,592) as applied to claims 1 and 19 above, and further in view of **McNeirney et al** (US 6,096,049).

Yanof et al substantially disclose of all claimed invention in claims 13, 14, 15, 32, 33, and 34. Furthermore, McNeirney et al teach that the light or optical guiding of a medical device or imaging device is well known, where light, optical or laser is used to indicate the point of interest for the medical imaging device (col. 2, lines 25-57). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply the teachings of Yanof et al to the teachings of McNeirney et al's light or optical guidance of medical imaging device to achieve the claimed invention.

(11) Response to Argument

Appellant's arguments filed on April 7, 2005 have been fully considered, but the Examiner respectfully disagrees as to the interpretation given to the Yanof et al reference.

102(b) on Yanof et al: In contrary to the Appellant's argument, a physical marking of a subject is inherently disclosed (step d in claims 1 and 20). In column 4, line 65 – column 5, line 2, Yanof et al disclose pointer 62, which is a light emitting diodes 80. The light emitting diode pointer is physically visible and a general use of a light based pointer is to provide visible target or marker that is pointed to a subject of interest. In alternative interpretation, the surgical tool, which is being inserted into the subject, is a physical and visible marker itself on the subject once the surgical tool is inserted in the subject. In addition, the pointer or surgical tool 62 serves as a marker for position and orientation of the surgical tool in correlation to the CT scanner and the subject (patient) to provide the marking process described below.

Therefore, the Examiner's position is that the Yanof et al fully anticipates all features in claims 1 and 20 where a method and apparatus for locating a subject by generating a volume (i.e. 3D) dataset to form images using Computed Tomography (CT) scanner. The CT scanner

generates volume dataset (rotating x-ray or fluoroscopic scanning). The dataset is then processed to form image data. Yanof et al specifically disclose the tracking and marking method and apparatus (steps a-c in claims 1 and 20) in column 6, lines 31-40:

> An instrument to volumetric image coordinate system transform processor 120 receives the correlation or transform from the instrument to planning image processor 102. The instrument to volumetric image processor operates on input position and orientation coordinates in image space to transform them into volumetric image data space or vice versa. Knowing the **position of the instrument in volumetric or planning data space enables the instrument position and orientation to be superimposed on the volumetric planning image** data.

Yanof et al's disclosure above creates marking in the images the location of the surgical tool 62 by superimposing the position input to the images.

As stated above, the Yanof et al reference disclose light marker, but Yanof et al's method and apparatus is silent as to optical sighting device. However, in using invasive surgical tool such as syringe, biopsy needles, a cannula or a drill, McNeirney et al teach that the optical sighting device is used to provide an accurate visual guidance and alignment to locate the point of entry or point of interest, column 3, lines 22-42. In addition, McNeirney et al teach that the above device is used in conjunction with imaging device such as x-ray, CT, or MRI providing clear motivation to combine with Yanof et al.

> Shown in FIG. 1 is an example of an invasive instrument 40 for use with a visible light beam 66 to access a subsurface target 50. Such an invasive instrument can be a syringe, a biopsy needle, a cannula, a drill or a similar instrument. As shown in FIG. 1, a targeting system 60, of a type preferred for use in conjunction with the instrument of the present invention, provides visible light beam 66 which is **directed along a predetermined path 65 toward subsurface target 50.** Most often **the location of subsurface target 50 is determined through the use of imaging equipment such as an x-ray system, a computer tomograph or a magnetic resonance imaging machine.**
>
> Visible light beam 66 is incident on surface 52 of an object 80 to be penetrated at a predetermined point and a predetermined angle. **The point and angle together help define the line of sight path 65, also referred to as predetermined path**

> **65, to subsurface target 50**. Visible light beam 66, when directed along path 65 to target 50, can be utilized to guide invasive instrument 40 along path 65 to access target 50 in a manner which will be described.

Further more, the Appellant's argument that the McNeirney et al's device is a handheld, thus incapable or providing automated feed-back controlled guidance. In response, the Examiner finds that claims 13-15 and 32-34 do not contain any limitation of automated feed-back control.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

William C. Jung, Ph.D.
Examiner
Art Unit 3737
June 24, 2005

Conferees

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